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Our Experiment Stations and their Work.

WE have just received from the office of Experiment Stations, at Washington, Bulletin No. 15, entitled "The Handbook of Experiment-station Work," which was prepared as a part of the exhibit of the office for the World's Columbian Exposition. The bulletin, which contains more than four hundred closely printed pages, is a popular digest of the publications of the agricultural experiment stations of the United States since their foundation. The topics are arranged alphabetically, and while the book does not pretend to be in any sense an encyclopædia of agriculture, still the number of its titles, the care which has been used in summarizing the original investigations and the useful compilations of the station bulletins make it a very convenient and valuable work of reference. One cannot examine the book without feeling a respect for the stations and their work, and being confirmed in the assurance that these institutions are destined to exert a potent and wholesome influence upon the agriculture and horticulture of the country.

The book makes clear, however, that in some ways there has been considerable misdirected effort on the part of the stations. When we are referred, for example, to more than a hundred bulletins in various states, which give comparative tests of different kinds of Strawberries, and reflect how much time and labor all this cultivating and comparing and recording and publishing has cost, it seems pretty clear that no adequate scientific or practical return can be hoped for from such an outlay. If the record of all the work in testing varieties of Strawberries by the stations were blotted out, the loss to the science and practice of horticulture would be comparatively trifling. What we have before insisted upon, is that the skilled workers in the stations can devote their time and energies to more fruitful fields of labor, and especially to work which ordinary farmers and fruit-growers cannot do for themselves. There are lines of inquiry which require a consistent scheme extending over a series of years, and such work the farmer has no time or ability to carry on. Much research of this kind requires apparatus which ordinary tillers of the soil cannot afford to buy and which they could not use to any purpose if they owned them, and much of it demands a knowledge of scientific methods which the average farmer and gardener do not pretend to possess. A great deal of the station work which would be stigmatized by cavilers as theoretical or technical, as if purely scientific investigations excluded what was useful, is in reality work of the most serious practical value. The directors and officers of the stations know this as well as any one else, and when they spend their time in testing a hundred and fifty varieties of Strawberries in order to ascertain which one is a day the earliest in a given place, or yields the biggest and reddest berries, they may delude a few people with the idea that they are doing eminently practical work, but they must know that work of genuine practical value comprehends the investigation of some fundamental scientific principle.

Upon the whole, however, when it is considered that the stations are new, and that at the passage of the Hatch bill, half a dozen years ago, there was hardly a score of men in the country who had sufficient experience to carry on with any efficiency the work of the stations, when we remember, too, the constant pressure upon them for some immediate and tangible results, the wonder is that so little effort has been wasted. There are now fifty-four of these stations, and the total number of persons engaged in them is about five hundred, and the sum they received last year from the state and national governments was more than a million dollars. The inquiry is pertinent, therefore, whether the economic results of these stations justify such an outlay. This is an inquiry to which Professor Frear replies in a recent number of *Agricultural Science*. While it is impossible to say just how many dollars and cents have been added to the wealth of the country by the direct researches of the stations, Professor Frear shows that in the utilization of by-products in our crops of cotton and grain, in the saving of what was once wasted in feeding unbalanced rations to domestic animals, in collecting more completely the butter fats in milk, in checking the damage from insect ravages and fungous diseases which, together, have amounted to more than $500,000,000 a year, in all these and other direct ways the amount of money already saved by the aid of investigations undertaken by the experiment stations, has greatly exceeded all they have cost. And this estimate entirely ignores a most important branch of station work, the trade-control, which, to a certain extent, gives the farmer a guarantee that the fertilizers which he buys are honest, the seed clean, and the food of his cattle unadulterated, while at the same time it assures the consumer that the milk, the butter and other farm-products which he buys are of standard value.

But, in addition to all this, the education of the farmer, the fruit-grower and the horticulturist by correspondence with the stations and by their publications has been of great value, and has prepared them for much more efficient work. In addition to letters and bulletins from the station, the farmers in many states have the benefit of institutes, conducted largely by station officers, and this brings the two classes into familiar personal contact, which stimulates inquiry on the one hand and accustoms those who feel they need assistance to make application for it at the proper source. Perhaps the inspiration which this contact with the stations has given to farmers and gardeners, the spirit of inquiry which it stimulates among them, the expansion of their mental horizon and the habit it encourages of looking for broad principles upon which to base their practice, are, after all, the most important benefits which the stations have yet conferred upon the country. When it once becomes a doctrine universally accepted as true, that science is the only sure foundation for the successful practice of agriculture and horticulture, an inestimable advantage will have been gained. When it has become a part of farm practice and farm life to trust to

science rather than to luck or guess-work, and to turn for information and support to men of exact knowledge, instead of relying upon superstition, tradition or prejudice, a new era in the history of agriculture and horticulture will be inaugurated. In spite of some failings and weaknesses, our experiment stations seem to be hastening the time when that day shall dawn.

In the latest numbers of *Notæ de Plantis Asiaticis*, extracted from the twelfth and thirteenth volumes of the Acts of the St. Petersburg Garden that have reached us, Dr. Batalin describes a number of plants recently discovered in northern China and adjacent regions which promise to be acquisitions to our gardens, and remind us that very important results from a horticultural, as well as from a botanical, point of view may be expected to follow the visit to northern and western China and eastern Mongolia of a well-trained collector with a sufficient knowledge of the Chinese plants now in our gardens to save him the labor and expense of sending home plants already known. Every traveler with botanical tastes who has visited China in recent years has reaped a rich harvest of undescribed plants, and among them have been a number of much horticultural promise. But while many collections of their plants have been made during the last ten years within the borders of the Celestial Empire, very few new Chinese plants have found their way into our gardens.

How rich a field China is for the enterprising horticultural collector the mere mention of a few of Dr. Batalin's new species, mostly gathered by the Russian traveler, Potanin, will show. They include new varieties of the Almond and the Peach; a new Prunus of the section Cerasus; a new Bird Cherry, distinguished from the Japanese and Saghalin Prunus Ssiori by its biglandular petioles; a green-flowered Parnassia, first gathered by Przewalski in Kansu; five new Honeysuckles; a new Incarvillea; a new Spiræa or Physocarpus; two new species of Pyrus; a second species of the curious Rodgersia of Japan, for which the name Æsculifolia is proposed, on account of the three-lobed leaves, which chiefly distinguish it from the first species; a new Deutzia, and a new representative of Helwingea, a genus which bears its flowers and fruits on the midribs of the leaves; a Phytolacca, related to our familiar Poke-weed; two new species of Pterocarya, western Asiatic and Caucasian trees of the Walnut family; a new Birch, and a new Hazel.

These are only a part of the plants recently picked up by Russian travelers, with whom, it must be remembered, botany was only an incidental occupation entirely subordinate to the principal objects of their journeys. The nature and character of the undescribed plants they have, however, been able to make known, as well as the more important collections of Dr. Henry in central China, and of the Abbé Delavay in Yun-nan, show how much may be expected from a well-tried collector able to devote his entire time and energies to collecting plants and seeds in the northern and western provinces of the empire, which are the only parts of the world not yet carefully explored, where new plants which may be expected to prove hardy in our gardens are likely to be found in considerable numbers.

Composition in Landscape-art.

THE modern or naturalistic style of landscape-gardening may be defined to be the forming of artificial scenes on principles learned from natural ones. The question of extent alone is usually sufficient to render impracticable the reproduction of a landscape perhaps containing miles of forest and plain which, however pleasing in the mass, may be found in detail to have its attractive objects too few and far between; thus, an acre of woodland with one picturesque clump of Fern is plainly not worth imitation on a private estate, where land has to be treated economically. Yet, although the copying of the natural prospect is not feasible, it is there that the principles of our art are based, whether they are applied to the smallest city lot or the largest park, and it is there that we must go for instruction either from its beauties or imperfections. It is there only that the aspects of Nature, whose essence is change, can be studied; there only can we watch the effect of the shifting lights on wood and meadow, the nameless charm of water at rest or in motion, the mysteries of recesses between massed trees from different points of vision, and the appearance of them all under different skies and seasons. But the selection from these different parts, and their composition into a new and consistent whole, can be learned in an easier school.

A work of art of any kind is the result of combining certain primary forms into a whole which would be incomplete with one more or less of them. To a certain extent these forms may be put together by the help of rules, though the point is soon reached where nothing is of any use but the instinctive perception of what is needed, gained by long thought and comparison. Perhaps in none of the arts is this point reached sooner than in landscape-gardening, in which circumstances are so various and the materials complete compositions in themselves, so that its unwritten laws would seem to require proportionately deeper consideration. But there has been another class of students of Nature's forms and phases, though they combine them differently, and with such different results, that at first the work of the two may seem to have little in common. The artist of the brush usually selects for his subject a scene which, apart from its extent, is most unsuited for reproduction by the artist of the spade and transit, whose work must have its utilitarian aspect as apparent as its æsthetic; its lawns and plantations must be easily and obviously accessible, and must display new beauties from every point of view, not from one only. His trees must be generally sound and shapely, and his roads solid and smooth, and the control of man must be everywhere felt without being obtruded. Such picturesque objects (in the painter's eye) as a road full of ruts or a decaying tree are not merely out of place; they are incongruous and unbeautiful. Yet, in spite of these and other diversities, the analogy between the two arts is pronounced, and of the highest use to the landscape-gardener who has the results of the work of generations ready for his instruction if he will only bestow patience and consideration on them.

The man who has painted a good landscape has only done so after years of patient labor and perpetual consideration of the proportion and balance of parts of all the materials he works with, and his instinct as to shape, size and position of the various objects he has introduced is so sure that the changing of one of them would probably result in the deterioration of the whole. Each has reasons for its place, size and form, reasons which, may be, would come under no formula, but are, nevertheless, entirely potent. A hand placed over some seemingly unimportant feature will often overbalance the whole and teach more of subordination of parts than pages of explanation. Careful study of the foliage tints in half a dozen good pictures will be a better lesson in planting for effect than the conning of all the catalogues of striking novelties ever published; it would be valuable did it only teach the mistake of planting trees in proximity for the sake of the contrast of their tints—a mistake too common in these days of perpetual new introductions of high-colored and variegated trees and shrubs. All these points, patiently and conscientiously considered, will develop in the outdoor artist the feeling of due proportion of parts in his own composition; and he will come to have as sure a perception of fitness in their size, form and relative position as the painter, since his work is founded on principles closely related and no less artistic.

An even more important use of the study of pictures is the light thrown on the placing of individual and conspicuous objects. In the natural landscape these are not often important; in the painter's they are usually the main fea-

tures of the design, and are inserted for similar purposes and regulated by similar laws of composition to those of the gardener. Here the green or leafless tree, the tumble-down building or group of cattle is replaced by a specimen tree, flower-bed or building serving in both picture and pleasure-ground the same purposes: to measure distances, to set off by their strong lights and shadows the tints of the subordinate parts softened into breadth and indefiniteness by ærial perspective; to give force to the foreground and tenderness to the mystery and recession to the distance. They are all important in the work of both painter and gardener, and the hand of a novice in either art is constantly shown by the presence of too many of them, until the sense of repose conveyed by a good composition of any kind vanishes in the contemplation of unmeaning repetitions of handsome Conifers or groups of sub-tropical plants placed as though the planter's conscience could never be at rest so long as a stretch of turf of any size lay open; or sometimes from a desire to get in as many varieties of trees and shrubs as possible—a sentiment arising from a genuine love of them, but which too often produces results disastrous both to the parts and to the whole. This kind of work is usually produced when the mind of the designer is in the experimental stage, and when he strives to introduce into his composition the element of completeness which he feels to be wanting by filling in a number of details which are not subordinate, but in their nature constructive, and therefore not to be used but as primary and integral parts of the whole plan. In no art more than in landscape-gardening is the sense of repose so necessary to good composition. To this nothing will contribute but the conception of the whole, essentially complete from the first. Each addition must be made with restraint and without uncertainty of purpose, or it will destroy the unity it is intended to create, and so fatally injure the realizing of a consistent and complete design.

It is this art of composition which eludes rules that is most necessary to the forming of an outdoor artist, who, if he would do original and artistic work, must have some of that instinct that will enable him to read the ideas of creators in their works and understand their language when they try to explain them.

Pittsburg, Pa. *H. A. Caparn.*

American Parks.

MOUNT ROYAL, MONTREAL.

ONE hears Montreal so often compared slightingly with Quebec, that I was agreeably surprised by its variety and beauty, by its terraced streets, rising one above another, its thronged port filled with vessels from every land, its handsome buildings and fine open squares gay with flowers, like the old French town it is. But, above all, was I unprepared for the beauty of the wooded mountain rising directly behind the town, with cleanly defined slopes such as befit a mountain, and its splendid crown of forest.

It is not a lofty peak, being, I believe, not more than five or six hundred feet high, but as it rises almost directly from the level of the River St. Lawrence, it gets the advantage of its full height, and is very imposing, indeed, and looks at a little distance so wild and inaccessible, that it was with surprise that I discovered that it was really a planted and cultivated park, and that there was a comfortable drive-way to its summit, of which travelers were expected to avail themselves. Therefore, after carefully exploring in the early morning the French and English quarters of the venerable town, and listening to a mass in the beautiful old church of Nôtre Dame, while its magnificent bell tolled a requiem for a departed soul, we wound our way in a carriage up the gently graded slope, scarcely prepared for what was in store for us.

In the first place, the size and height of the trees was a surprise. Early June is spring in Montreal, and our driver told us that there were no leaves at all the last week in May, so that the verdure we beheld on June 16th had all the freshness of new birth upon it. Knowing, then, that many of the trees were the result of cultivation, I was astonished at the great variety to be found here. The Basswood-trees, especially, were most vigorous in growth, and the Maples had shot up to a great height. The Cork Elm, which abounds in Toronto was frequent here, with its brown wing-like excrescences, resembling blossoms, on every twig. Oaks were to be seen in plenty, and fine Hemlocks, and Pines, and Spruces, while in the less densely wooded spaces were flowering shrubs, such as the Tartarian Honeysuckle, the Hawthorn and the Deutzia, growing as freely as if they were wild, in the shelter of the surrounding forest.

From the road by which we ascended, which was here and there accompanied or intersected by bridle and foot paths, there was no outlook, only a dense wall of green. After a long time we came to an open space, where there is a broad expanse of sloping meadow, used in winter for a toboggan slide, but this was also enclosed by trees. Not far from this is a large two-story building, surrounded by gardens and nurseries, which is the dwelling of the superintendent of the grounds. This dwelling, which is substantial and comfortable in its appearance, is not concealed from the drive-way, and seems consequently rather incongruous in the park. Indeed, what strikes one particularly is such an absence of studied effect, that only the exotic shrubs suggest that the whole scene is not the work of Nature alone.

Finally the road issues upon the summit of the mountain, where is a wide level plateau, half-surrounded by Pines, and a large rustic pavilion with benches, from which the unrivaled prospect bursts suddenly upon the sight. The descent is so abrupt that the tops of trees make a foreground, behind which the gigantic panorama stretches away. There lies the valley of the St. Lawrence, with the majestic river flowing around its islands, the opposite horizon bounded by the beautiful sweep of the Laurentian mountains, with their blue peaks firmly outlined against the soft haze of a summer sky. In extraordinarily clear weather the peaks of the White Mountains and the Adirondacks are said to be visible from this elevation, but light clouds hid them from our view during our stay.

At our feet lay the old French city, its harbor crowded with masts, its ancient spires rising from its groups of venerable houses. Steamships bound for Britain smoked in the harbor; others almost as large, used for the service of the Great Lakes, were lying at the piers. One took in at a glance the great commercial activity of this city, which, though so far from the Atlantic, is really the great Canadian seaport, and five hundred miles nearer Liverpool than is New York.

A more imposing view it would be hard to find, combining at once the beauty of broad and fertile plain with the picturesque slopes of mountains and the stately sweep of a noble river by its bordering towns. Some of the peaks rose isolated and distinct, one beside the other; others rolled away in graceful lines of undulation. Masses of trees and meadows of vivid green announced the fat deep soil that nourished them, and the whole scene bespoke opulence and comfort, and had a touch of imperial power, which made one feel that annexation would not prove quite so simple a job as some enthusiasts would represent it to be. England will not lightly part with this fine jewel of her crown one may be sure. Apparently, the Montreal people are satisfied with this view at the end of a long and rather monotonous drive up the steep mountain-side, but in the design originally furnished to the Commissioners by Mr. Olmsted, provision was made for outlooks at intervals upon the surrounding scene, so that the mind could be gradually prepared for the fine spectacle to be ultimately revealed. But, either from a lack of money, or of befitting sense of the requirements of a park, the most well-considered features of that scheme of his have been neglected, and the great opportunity wasted.

The Mount Royal property was purchased in 1874, and at that time Mr. Olmsted drew a plan which was designed to utilize all the fine natural advantages of the situation, while supplementing them with a new and vigorous growth of trees. In 1887 he published a little work showing that his design had not been followed in many respects, naturally to the disadvantage of the grounds, on account of the difficulty of shaping public opinion to a proper recognition of the artistic capabilities of the spot, so that the views of the Commissioners were frequently overruled by the City Council.

It has been impossible to obtain any reports of what has or has not been done by the Park Commission, so I only know that the original map provided for an extent of 550 acres, part of which was to be set off for reservoirs and streets. The property of Sir Hugh Allan, now occupied by his family, is, I understand, ultimately to be incorporated in the park, from which it is at present separated by walls. On this side of the mountain is a rocky precipice (the Crags), which, according to the original design, was to have formed an effective feature, but they are not noticeable from the carriage-drive, being con-

cealed from it now by trees and undergrowth. Possibly they can be better viewed on foot.

At the time Mr. Olmsted's little book was published the trees had not made a great growth, but their present luxuriance is very striking, and they form the chief variety in the approach to the great scene visible from the summit. From that summit one descends on the opposite side of the mountain, passing the reservoir and the Allan and Redpath properties, and issuing into the streets of the city. At a distance the mountain is disfigured by the perpendicular cut of a steep railway which leads to the top, and is an ugly feature in the landscape.

A city so grandly endowed by Nature with such a pleasure-ground as this is truly to be envied, and it is to be hoped that nothing will be neglected in its future management to enhance its picturesque advantages.

Hingham, Mass. *M. C. Robbins.*

Notes on some Texas Trees.

Fraxinus Americana, var. Texensis, a small tree with hard, fine-grained wood of great value for flooring, but generally is too small for use, except as fuel, which is rated as first-class. Some trees reach the height of fifty feet, with body two or three feet through, but generally they are much smaller. They grow on limestone bluffs and are never found growing naturally along the water-courses. The popular name of the tree here is the Mountain Ash.

Ulmus crassifolia grows in all situations and soils, except pure sand. In the low and swampy lands of the Trinity bottom, this Elm and the Celtis occidentalis form the four-fifths of the timber. It grows there in dense clumps to a height of twenty to forty feet, and along the foothills and other favored places some specimens are found eighty feet high, with a diameter of three or four feet. Under such favorable conditions the tree is generally straight and symmetrical, with branches spreading at right angles. On dry uplands and in rocky localities it is a small tree, with a thick trunk and broad head. The leaves are very small, but densely set on the boughs and of a dark green color, turning to a bright yellow late in the fall. The flowers are very small and appear in August and September, followed by abundant seeds that are ripe three or four weeks later. Though comparatively rare in cultivation here, this species must be recommended as one of the best shade-trees of this country. Among its commendable qualities are its adaptabilty to all kinds of soils and situations, its freedom from diseases and attacks of insects. I do not remember ever to have seen on it any of the lice which infest the White Elm. The wood is of a reddish color, and splits easily. Before the advent of railroads it was used for fencing, either as rails or boards, and was quoted only as second quality. This species is known here as Red Elm and Cedar Elm.

Maclura aurantiaca attains at its best development the height of forty or fifty feet, with a trunk three feet thick. The leaves are broad, dark green, turning bright yellow in the fall. It is dicœcious, and the fruits, as large as the largest oranges, and of a pale green color, give to it a very striking and picturesque appearance. This is one of the most valuable trees of Texas. The wood that is yellow is practically incorruptible, and for that reason is extensively used for posts, wheels and spokes, and it makes an excellent paving material. The town of Dallas has its principal streets paved with blocks of this wood, and it has proved a great success. The bark has been used for tanning purposes. The Maclura makes a good shade-tree, though the big fruits are sometimes in the way, but its main use is as a hedge-plant. It requires severe pruning in order to keep it in bounds. The fruit is eaten by horses and cattle. This tree, known as Osage-orange and Bois d'Arc, grows in the rich bottom-lands along the water-courses of the eastern part of the state; but it is only moderately abundant, and it is to be feared that large specimens will soon become quite scarce.

Quercus Durandi, an Oak that acquires in Alabama quite large dimensions, is a rather dwarf species in Texas. The biggest tree I ever saw was about twenty-five feet high and one foot in diameter, but such are of a very rare occurrence. For the most part it is a straggling shrub, a few feet high, forming large clumps or extensive thickets on rocky bluffs of western Texas. Its principal merit is its heavy crop of small acorns that it hardly fails to produce every year. The tree, when isolated, is not devoid of beauty, and its dense foliage, persisting late in the season, may recommend it as a shade-tree. It is called the Pin Oak.

Dallas, Tex. *J. Reverchon.*

Notes on the Forest Flora of Japan.—XXVI.

Of the Firs of Japan we saw only four species, and one of these, Abies firma, only as a cultivated plant. This is the largest and the most beautiful of the Japanese Firs, often growing in cultivation to the height of one hundred and twenty feet, and producing clean tall stems four or six feet in diameter. Writers on Japanese forests speak of Abies firma as common south of latitude forty, north, in the upper belt of deciduous trees, but we never saw it except in parks and temple-gardens, or in the immediate neighborhood of houses. It is this species which is chiefly called Momi by the Japanese, although the name is applied generally to all Firs, and it is this tree which in Hondo supplies the fir-wood of commerce. This is soft, straight-grained and easily worked, and hardly distinguishable from the wood of the European Fir; it is used for building purposes and cheap packing-cases, but is not greatly valued. Although this species has usually proved a disappointment as an ornamental tree in this country and in Europe, it is certainly, as it grows in Japan, one of the most beautiful of all Firs, distinguished by the nobility of its port and by its bright green and very lustrous long rigid leaves, which are sometimes sharply pointed, and sometimes divided at the apex. It probably needs a warmer and moister climate than that of the northern United States in which to develop all its beauties; further south it should, however, make a fine tree.

The Fir of which we saw the most in Japan is the Abies homolepis of Siebold and Zuccarini. This is the plant which is now often cultivated in our gardens under the name of Abies brachyphylla, a more recent name. It is the common Fir of central Japan, and abounds in the Nikko Mountains between 4,000 and 5,000 feet elevation above the sea, although it does not form continuous forests, but is scattered singly, or in small groups, through the Birch and Oak woods which cover the ground just below the Hemlock belt. It is a massive, although not a very tall, tree, apparently never growing to a greater height than eighty or ninety feet; and in old age it is easily distinguished from all other Firs by its broad round head, the branches near the tops of the trees growing longer than those lower down on the stems. This peculiarity is seen even on young plants in our gardens, on which the lower branches, which soon stop growing, are shaded by the longer ones produced above them. The pale bark, the long crowded leaves, dark green above and silvery white below, and the large purple cones make this a handsome tree. In cultivation here it is very hardy, and grows with remarkable rapidity. The inaccessibility of the places where Abies homolepis grows in Japan precludes the general use of the wood, although we found it employed in the little alpine village of Umoto for building material.

The chief object of our visit to Mount Hakkoda, in northern Hondo, was to find Abies Mariesii, which the botanical collector, whose name this tree bears, discovered there several years before. It is common on this mountain at about 5,000 feet above the sea-level, scattered among deciduous trees, and, so far as we observed, it is the only Fir of northern Hondo. As we saw it, Abies Mariesii forms a compact pyramid about forty or fifty feet high, with crowded branches covered with short dark foliage, pale below, and producing in great abundance large dark purple cones. It is a handsome, but in no wise a striking or remarkable, tree, which in all probability will flourish in severe climates. It is only known on the high mountains of northern Hondo and in one place on the shores of southern

Yezo, where it was discovered during the summer of 1892 by Mr. Tokubuchi.

On the hills of central Yezo, Abies Sachalinensis is not rare, and in the northern part of the island and on Saghalin this fine tree is said to form extensive forests. It is a tall pyramidal tree with pale bark, long slender dark green leaves, and white buds, which make it possible to distinguish it readily from the other Japanese Firs. A curious form has been noticed by Professor Miyabe, growing near Sapporo, with red bark, dark red wood and red cone bracts; it grows with the common form and is probably merely a seedling variety, although Professor Miyabe considers it specifically distinct and proposes to call it Abies Akatodo. We were fortunate in securing a supply of seeds of the white and of the red bark varieties, and the seedlings, perhaps, will show whether they should be considered distinct. Abies Sachalinensis produces wood of fair quality, which is used in Sapporo in building and for packing-cases; apparently it has only a local consumption. The young plants of Abies Sachalinensis in our gardens are perfectly hardy and grow more rapidly than those of any other species of Fir-tree.

Abies Veitchii, discovered many years ago on the slopes of Mount Fugi-san, we looked for everywhere, and although it is said to grow among the Nikko Mountains, we saw nothing of it there or elsewhere. From Abies homolepis, which this species most resembles, it may be distinguished by its short and more crowded leaves, its more slender pubescent shoots and smaller cones. This tree is an old inhabitant of our gardens, having been sent many years ago by Mr. Thomas Hogg to the Flushing Nurseries, where it was cultivated under the unpublished name of Abies Japonica long before it was known in Europe. Of Dr. Mayr's Abies umbellata, a species probably too near Abies homolepis, we saw nothing at all.

The forests of Hondo contain at least one Larch, Larix

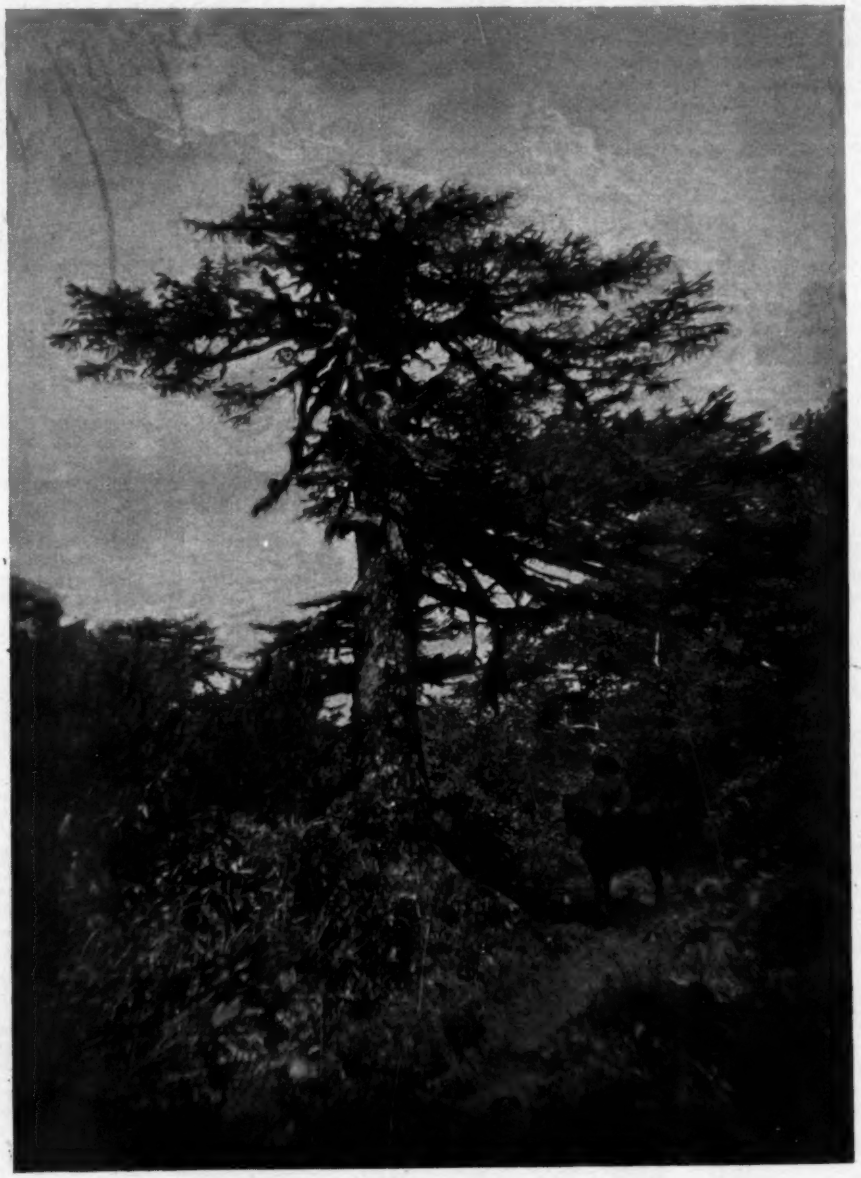

Fig. 76.—Larix Dahurica, var. Japonica, on Iturup, one of the Kurile Islands.—See page 524.

leptolepis. It is a fine tree, seventy or eighty feet tall, with pale green foliage and massive trunks covered with reddish bark, and in habit not unlike the European species. The Japanese Larch is not rare at elevations of from 5,000 to 6,000 feet in the central part of the island, although we saw it nowhere growing in continuous forests, but always scattered in small groves, mixed with other deciduous trees. Larix leptolepis was introduced into American gardens many years ago; it grows in this country with great rapidity, and the oldest trees here have for many years produced abundant crops of seed. The wood, like that of other Larch-trees, is hard, heavy and strong. The trees, however, are so difficult to reach that it is little used in Japan, except for the timbers of mountain mines.

Maximowicz describes a variety of this species, var. Murrayana (Larix Japonica, Murray), which grows as a low shrub near the timber-line of Fugi-san; and my companion, Mr. Codman, made a special trip late in the autumn for the purpose of securing specimens and seeds of this plant. In this he was successful, but his specimens gathered from plants only a few feet high, growing at an elevation of 8,500 feet above the sea-level, only differ from those of the common arborescent form in the smaller size of the cones and in the shorter leaves.

A variety of Larix Dahurica, a species widely distributed through Siberia, northern China, Manchuria, Kamtschatka and Saghalin, reaches the extreme northern part of Yezo and the Kurile Islands. This form has been called var. Japonica by Maximowicz, and by Mayr Larix Kurilensis. We were not fortunate enough to see this tree in its native forests, but some idea of its appearance as it grows in the island of Iturup can be obtained from the illustration on page 525 of this issue, which is produced from a photograph for which I am indebted to Dr. Mayr, who visited the Kurile Islands during his residence in Japan.

The other arborescent plants of Japan, Cycas revoluta, a favorite garden-plant, especially in the south, where it often grows to a great size, and Trachycarpus (or Chamærops) excelsa, naturalized in some parts of the south, appear to have been introduced from the Loochu or other southern islands, or from Formosa or southern China.

C. S. S.

Cultural Department.

Plums for the Cold North.

VERY few of the Plums of west European origin or descent will endure the extreme winter's cold of our northern border and Canada. In sheltered gardens of the city of Montreal Plums are successfully grown, and quite a number of good varieties, some of which have a place in our pomological treatises, were originated there. On the island of Orleans, below Quebec, large quantities of small blue and white plums of the European species are grown quite abundantly, and are seen in their season in market along the St. Lawrence. But all these varieties, even the hardiest, fail in the hill country to the south of the St. Lawrence, which marks the water-shed between the St. Lawrence and the Connecticut valley.

About many farm-houses on both sides of the international boundary are to be seen trees and thickets of the wild red and yellow Plums of our woodlands. They rarely appear in the thick woods, and are most commonly found along the streams. Where the country has been partially opened they are noticed to some extent along the edges of the forests, and even by the road-sides. Still it may be said that they are not abundant; and it was only after a good deal of searching that I have been able to find them absolutely wild. Such as I have found, though the trees were very productive and the fruit of fair size, were of a most austere flavor, with thin flesh over the seed, yet here and there specimens of better quality are found, and most farm-houses have a few such trees about them. As a rule, these have a strong tendency to throw up shoots from the root, so that, unless carefully pruned and trimmed out, the stems are crowded, and the fruit is much smaller and not so good as where single trees are planted at uniform distances and properly pruned. A few of these wildlings have been found that deserve to be propagated, not only for culinary use, but for eating from the tree; and these, when given garden-culture, often surprise one, both by their profuse bearing and good quality. It is evident that by care in growing seedlings, and selection over a series of years, a great improvement might be obtained, but farmers generally pay little attention to such matters. They are rarely much interested in things requiring care and continued attention, still they are not all so; and with pains a considerable number of pretty good varieties may be picked up among them, and as these all have the merit of hardiness against cold, they have a decided value, as the fruit sells readily in the village stores.

Of late we have been receiving from the north-western states a considerable number of selected varieties of the wild Plums of that section, which seem to take kindly to our soil and climate, but as yet they appear to lack productiveness. I think that it may be said that all these native Plums do best in a moister soil than they are likely to find in cultivated gardens. They also need to be grown in groups of different varieties in order to a more successful pollination.

Among the recognized varieties of the old European species of Plums I have never found any that would endure the winters of north-eastern Vermont except two seedlings—one native, which I found on a farmer's garden on Lake Memphremagog, and another, originating in Aroostook County, Maine, and known as Mooer's Arctic. The origin of the first cannot be traced; but Mooer's Arctic is stated by the originator to have been grown from a seed of a blue plum of medium size bought at a street-stand in Boston. It seems to me pretty certain that this must have been the Lombard, which is the only variety so sold to any great extent; it is reproduced, though of reduced size, in this new variety.

The two varieties above referred to are much alike in size and quality; but the Arctic, a much earlier and a more profuse bearer. In quality it is much like its parent, and has proved profitable as a market variety. Indeed, Mooer's Arctic has the fault of overbearing, to the extent of so weakening the vitality of the tree as to cause it to be winter-killed by a temperature which would not injure it when not fruiting so heavily.

It has been lately found that any early-bearing variety of Plums can be grown successfully, even if not hardy in our climate, simply by bending down the trees in the fall and covering them with earth. This can be more easily done with dwarfish kinds; and in the province of New Brunswick large quantities of the Arctic are so produced, to be shipped to city markets. The trees are pruned flat, or "fan fashion," so that the branches may lie close to the ground and require little covering; or, in fact, none, when set upon the south side of a tight fence, which causes the snow to drift deeply over them. While by these methods we are relieved, in the cold north, from an entire destitution in regard to Plums, I am satisfied that a more satisfactory resource will be found in the large variety of Russian Plums, which have been imported, mainly, through Professor Budd, of the Iowa Agricultural College. I have a young orchard of some dozen or more varieties of these Russian Plums, which show themselves to be quite independent of our severe winter climate. They grow vigorously, and are beginning to produce fruit which seems to be not inferior to an equal number of our older and well-known varieties. They have all the variety of size, color and quality that marks our older sorts, imported from England, France and Germany, or their American seedlings. For all these Russian fruits—Apples, Pears, Plums and Cherries—we need time to discover their peculiarities and study their needs. But they do not as yet appear to be greatly different, except in resisting power against low temperatures, from those we already have. The most marked trait noticeable, as yet, is their thrifty growth and a disposition to early and abundant fruitage.

Orleans Co., Vt. *T. H. Hoskins.*

Small Greenhouses.

NOW that the frosts of December have made the outdoor garden mostly a study in sepias, consolation is found in the genial temperature of the greenhouse, and I wish to make a plea to flower fanciers and owners of small places to have one of these, no matter how unpretentious. While there is now not one greenhouse to a thousand gardens, this important adjunct would often be added if it were generally known that a small house is not an expensive structure, and that the maintenance is a trifle quite within the means of limited purses. Modest things are the most that many of us can compass in this world, and to wait for ideal things is simply to be ever without them. Granting that a greenhouse is desired, the most practical plan is to go ahead and build one, taking heed it shall not be a burden either in the first cost, or so extensive

as to require much labor for daily care. It is well to locate the greenhouse near the dwelling, as it can there be better enjoyed. If the heater can be placed in the cellar it will be a great advantage, both in saving space, in keeping dust away from the plants, and for convenience of attention to the fire. A greenhouse is a space enclosed by low walls with a sloping glass-roof, in which there must be arrangements for ventilation. The walls are best and most cheaply made of a double thickness of boards with a lining of building-paper. These walls should be nailed to upright posts at the corners and to others at distances of three or four feet. A drip-board should be nailed on the top of each side wall at the same slope as the proposed roof, and on its lower edge a narrow projecting strip must be nailed to serve for a gutter. A two by six inch board will make a good ridge for a small house, and may be adjusted at the proper height and in the centre or at one side, as it is intended to make a span or three-quarter span roofed house. If the house is to be covered with garden-sash it will be necessary only to fasten a narrow strip, say, three-quarters by two inches, at every three feet; but for a glazed greenhouse, sash-bars are mortised in the ridge and drip-board at proper distances to receive the glass. Cross-bars will be necessary to meet lower bars of ventilating sashes. The ends of the house are finished with sash-bars, in which the glasses should be fastened and butted, rather than lapped. This class of house may be built by any handy man used to carpenter's tools, and will cost for materials in a house ten by fifteen feet about $75.00. It will be found preferable to have side lights on the side walls, and these sash will add a little to the cost. It is advisable to have the inside of the house and all joints covered with white-lead in oil, but for the outside I prefer emerald-green in a private garden. This color wears well, and the house is not such a staring object in the garden. It is difficult to see why a greenhouse should be painted the usual white, for, at its best, it is simply a necessary garden cover, which should be made as inconspicuous as possible. The heater and pipes for a ten by fifteen foot house, if well bought, should cost about $50.00. A properly made base-burner will require attention only twice daily, and should keep the house at sixty degrees in this climate on half a ton of coal a month, or even less if the fire has more attention. To sum up, then, for a capital expenditure of, say, $200.00 or less, and a yearly expenditure of $15 00 to $20.00, a greenhouse may be had which will give profitable returns of flowers and plants at all seasons, and be a source of endless pleasure. The work connected with such a house is not beyond the strength of the daintiest of the tender sex, if only some one can be found to care for the ashes and to wash the pots. The daily routine is mostly an inspection and proper watering of each plant, and to one who knows his plants and enjoys them this routine is a daily recurring pleasure, and not a task.

Elizabeth, N. J. *J. N. Gerard.*

Lælia furfuracea.

THIS is one of the handsomest of the Mexican Lælias which flower in autumn and winter. It is not unlike L. autumnalis; indeed, the one sometimes passes for the other. At the same time, the difference between what may be termed the types of the two species is sufficient to satisfy horticulturists. L. autumnalis has longer pseudo-bulbs, larger flowers, with petals and sepals sub-equal and narrowed to a very decided acumination. In L. furfuracea the pseudo-bulbs are ovate, and so similar to those of L. majalis as to be mistaken for it; the leaves are about six inches long by an inch in width, thick and leathery, usually in pairs. The scape is from eighteen inches to two feet in length, and it bears from six to ten flowers in a cluster near the end. There is a figure of L. furfuracea in the *Botanical Magazine*, t. 3810 (1840), showing two scapes, each bearing one flower only, but specimens in the herbarium show more, and there are plants in flower in the gardens now with from six to ten flowers on a scape. Each flower is three inches across, the color varying from rich rose-purple to almost lavender-rose. The petals are nearly twice as wide as the sepals, and nearly rounded at the apex; the three-lobed lip has the two nearly white lateral lobes folded over the column; and the front lobe is oblong, reflexed, bright purple, with a yellow three-ridged crest, and some purple lines at the base. The odor of the flowers is peculiar, not agreeable as in L. autumnalis, but suggestive of rhubarb.

Lælia furfuracea is widely distributed in Mexico, whence it was introduced about fifty years ago; it had, however, been found by Count Karwinsky about the year 1832 in the neighborhood of Oaxaca at an elevation of nearly 8,000 feet. It has since been imported in quantity many times, but had become a rare Orchid in English collections until this year, when it was imported in quantity and sold as L. majalis. There is some variation in the color and size of the flowers produced by the plants of this last importation, and it has in consequence been suggested that they are of natural hybrid origin, some of the plants having been offered at an auction sale in London recently under the name of L. Marriottiana. It is, of course, possible that these plants are of a superior type to that hitherto grown as L. furfuracea; certainly the plants at Kew have flowered better than that species has hitherto. But, after careful comparison with herbarium specimens and drawings of Lindley's L. furfuracea, no difference could be found to justify a distinctive name for it. The supposition that these plants are natural hybrids invites attention to the fact that there are already two Lælias suspiciously like L. furfuracea, which Reichenbach named and described as natural hybrids, namely, L. Eyermaniana, named in 1888 from a plant flowered by Sander and suggested to be the offspring of L. majalis and L. autumnalis; the second, being that called L. Gouldiana, also flowered in 1888. This is supposed to be a natural hybrid between L. autumnalis and some other.

Lælia furfuracea should be grown on blocks, or in baskets suspended in an airy, sunny position in a cool house. We have treated it as we do L majalis, which flowers here, when started in the Cattleya-house, in spring, and hung on a tree outside in the sun during summer and autumn. They like plenty of water while growing, and a good baking after the growth is finished.

London. *W. W.*

Oncidium Gravesianum.—This plant is one of the latest additions to the already long list of Oncidiums known to cultivators, many of which, however, have proved very short-lived under artificial conditions; this species, however, appears to have no weakness of this sort, and increases every year. It is a native of Pernambuco and was discovered and imported with Cattleya labiata by Sander & Co. There is a figure of O. Gravesianum in the *Gardeners' Chronicle*, May 21, 1892, but it does not do justice to the variety in bloom with us, being much more star-like in outline and suggesting that the flowers were poor ones borne on newly imported plants. Our plants, when received, were thick masses of copper-colored bulbs, just as they had been torn from the branches of trees in Brazil, and these are now flowering from the second season's growth made in this country. There is a very strong resemblance in the flowers to those of O. crispum, and a variety of this now in bloom is almost identical in color with O. Gravesianum. The resemblance ends with the flowers, the growth being very distinct. The whole flower is a rich dark bronze, the inner half of the lip being bright yellow; there are over twenty flowers on each of the three panicles borne on the plant, and they appear to last a long time in good condition. O. Gravesianum thrives well at the cool end of the Cattleya-house, where a temperature of fifty degrees at night during winter seems to suit it, and prevents the tendency to premature growth, which is apparently a habit of this species when cultivated.

Messrs. Linden's collectors state that in the district where the Cattleya labiata was rediscovered no rain had fallen for ten years, the plants being wholly dependent upon the heavy dews for their supply of moisture, and this bit of circumstantial evidence gives us a clue to the treatment of our acquisitions from this region, which all bear, more or less, the appearance of having been exposed to a fierce sun, and a thorough ripening process, such as a scanty supply of water would naturally bring about.

The Orchid-weevil.—When writing recently of Dendrobium Phalænopsis I quite omitted to speak of the danger to cultivators of introducing that dread pest the orchid-weevil, which has left unmistakable evidence of its ravages on most of the plants as they were imported. The fact is, I had not found any of the insects since the plants came six months ago; but the other day there were two plants whose bulbs were discolored and felt soft to the touch. A dissection disclosed several of the grubs in each bulb. While there is, perhaps, no reason for alarm when one is forearmed, it would be disastrous if, through oversight, this pest should gain a footing in the Orchid-houses throughout the country. There is no known remedy except to cut off the affected bulbs and burn them. This is harsh treatment, but it must be rigorously followed up if we would keep our plants in health. I believe it is easier to detect the insect in the bulbs of a Dendrobium than in those of a Cattleya, as they are slender, and a cavity is more evident to the touch, hence we need have no fear of being able to control these invaders in the case of this Dendrobium.

South Lancaster, Mass. *E. O. Orpet.*

Cosmos hybridus.—My general practice has been to sow the seed of this plant about the middle of April in the greenhouse, and as soon as the seedlings are ready to handle comfortably I pot them into three-inch pots and half-plunge them in an outside frame, protecting them from the frost. I believe, however, that the best way for an amateur is to sow the seed from the 1st to the 15th of May, according to latitude, in the open border, or, perhaps, in a frame, and when the seedlings are from six to eight inches high to transplant them where they are to flower. After they have grown, say, a foot high, the points should be pinched off in order to encourage a stocky habit. After they have made another foot of growth they should be pinched again, and this should be continued until the end of July, when they ought to be, at least, two feet high and about the same in diameter. After this they can be allowed to grow. I formerly root-pruned my plants by running a spade down on two sides of the plant, starting about eight inches away from the collar, and slanting the spade toward it, but this made no perceptible difference in the time of flowering, and I now believe that the only way to induce these plants to flower before the regular season is to plant them in boxes, as is done sometimes with Chrysanthemums. This would certainly ripen the wood earlier, and probably bring them into flower a week or ten days ahead of time. If grown in boxes or large pots they could be taken inside, and they would keep on flowering until the plants were cut to the root. The tendency of Cosmos to grow tall, makes it liable to be blown about and broken by the wind unless it is carefully staked, and I therefore advise to plant it against fences, out-houses, or in some similar situation, where it is much easier to care for. When planted along with low-growing plants, Cosmos is apt to overrun them, so that, besides itself, there is little left to be seen in the bed by the 1st of August, but this tying back to the fence gives lower plants a chance.

Washington, D. C. *Wm. S. Clark.*

Correspondence.

Climbing Roses in California.

To the Editor of Garden and Forest:

Sir,—Among more than fifty varieties of climbing Roses under cultivation in my garden, the best is the crimson climber Reine Olga de Wurtemburg, a hybrid Tea. This Rose is but little known, and another sort of less merit has been masquerading under its name. As a grower it is excelled by few, if any, sending up great strong shoots covered with heavy foliage, each leaf-stem bearing five leaflets. It climbs ten or fifteen feet in a season. It is free from disease, and is not subject to the attacks of insects. The flowers are fine in bud and semi-double when open, and often measure nearly six inches across when fully expanded. The color is brilliant crimson, which, though it fades with age, keeps brilliant still, and a bush in full bloom on a house or trellis actually blazes with color as far as it can be seen. It begins to bloom in February in Fruitvale, and does not cease until September. The bright buds are favorites with florists, especially in early spring.

Reine Marie Henriette, another of the hybrid Tea class, has even a more beautiful flower than the closely related Olga de Wurtemburg. The petals are very long and heavy and curve slightly inward, giving a flower of beautiful form. The buds are also very desirable and are freely produced, but the principal crop comes about a month later in the spring. The plant is, however, rarely free from buds and flowers. It is a good, strong grower under favorable conditions, but does not like exposure to winds or sudden changes of temperature, and the hot sunshine will burn and ruin the flowers. Both these Roses have a delightful odor, that of Marie Henriette being of a decidedly fruity character.

Among the climbers with yellow flowers, the old Maréchal Niel may still be said to head the list, though the climbing Perle des Jardins follows closely. When young, Maréchal Niel grows with vigor and blooms with profusion, giving a constant succession. In a few years, however, canker is apt to set in just at the surface of the soil, and the plant soon dies. This may, in a measure at least, be prevented by working the plant on some strong-growing and kindly stock like Banksia, Double Cherokee or Baltimore Belle. This Rose loves the protection of a glass-house kept cool and well aired in summer, and not too warm in winter; it is then rarely without flowers. Much is expected from the climbing Perle des Jardins. It is healthy and forces well. If, like the parent sort, it flowers in profusion, it will displace Maréchal Niel entirely as a commercial Rose.

Chromatella, or Cloth of Gold, as it is more generally known, is not less beautiful than Perle des Jardins. The petals are longer, but there are not so many, and the color is not so deep. It is a shy bloomer, even in spring. Like Maréchal Niel, it does better grafted on one of the Banksias than when left on its own roots. It is difficult to propagate, and will always be scarce.

Claire Carnot is a beautiful Rose; the color is creamy white, set aglow with shades of orange and crimson, and it blooms with tolerable freedom. The best pink climber up to this time is Elie Beauvilain. It is a fine clean grower, and a profuse and constant bloomer. The flowers are very double and perfect; the color is pink, with a slight coppery tinge. Climbing Devoniensis is the prettiest white climber in the collection, and is a good grower, but Lamarque is a better and more constant bloomer, and is usually grown in preference. A more useful Rose than either of these is Madame Alfred Carrière. It is especially good for cutting, as it lasts well.

We grow three varieties of Banksias—two yellow and one white. They have no thorns; grow strong and high, and are evergreen, though not everblooming. For a couple of months in the spring they are such a mass of flowers that but little foliage can be seen. The branches then resemble those of a Cherry-tree in full bloom, the flowers coming in clusters. Of one variety of yellow Banksias the flowers are the size of a half-dollar, and of the other the size of a quarter-dollar. Those of the white sort are in size midway between the two yellows, but the white has a grateful violet fragrance which the yellow varieties are deficient in.

San Francisco, Calif. *H. G. Pratt.*

Elæagnus hortensis in Dakota.

To the Editor of Garden and Forest:

Sir,—One of the most gratifying features of tree-planting in South Dakota is the marked adaptation of Elæagnus hortensis to the soil and climate of the state. Although a native of the orient, it flourishes without protection where the thermometer not unfrequently registers thirty degrees below zero, and where the annual rain-fall does not exceed twenty-two inches. Specimens of this shrub planted on the grounds of the Agricultural College at Brookings in 1888 have attained a height of twelve feet, and for two years have matured their fruit.

The leaves do not start very early in the spring, but when once developed they give the plant a bright and cheerful aspect by their silvery whiteness. The flowers, which are borne in small pendulous clusters, are rather inconspicuous, but because of their great number and pleasant odor they render the plant attractive. The fruit is persistent, often remaining upon the branches throughout the entire winter, and after the leaves have fallen, which does not occur until severe freezing, they form an ornamental feature.

In October, 1892, some seeds of Elæagnus hortensis were planted about an inch deep in a cold frame and afterward covered with nearly six inches of coarse mulch; this was removed the following May. The young plants came up quickly and made a good stand, and as long as the moisture was abundant the growth was rapid, but as the season advanced and dry weather set in, the growth was retarded, so that the young plants did not attain a height to exceed ten inches. The experience of the past season in growing the plants from seed, while not highly successful, is, on the whole, encouraging. During last autumn we planted the product of the few trees we have, with the hope that, if the seed shall germinate as well as last season, we shall be able to increase its growth by irrigation. The drought does not seriously interfere with the growth of the tree after it has become once established, and this is a point greatly in its favor.

There is no doubt that this shrub is suitable for lawn-planting, and in addition it has features that would make it an excellent wind-break for small fruits, since it has the useful characteristic of retaining its lower branches, thus proving a good snow-catch. In this treeless section small fruits suffer quite as much from lack of snow covering as from any other cause, and any plant that has the power of breaking the force of the wind and causing it to deposit its burden of snow must find favor for use as a shelter. This use, together with its hardiness, rapid growth and ornamental character, should commend it to planters in the north-west.

Brookings, South Dakota. *L. C. Corbett.*

The Catalpa in Kansas.

To the Editor of Garden and Forest:

Sir,—A few days ago I saw a writing-desk made from the wood of a tree of Catalpa speciosa that was just ten years old from seed. The tree was transplanted twice when quite young; was planted on prairie-soil, with a fair amount of cul-

tivation, but plenty of room to make the best possible growth, and it made a log ten inches in diameter at the butt when cut. The tree was cut early in the spring of 1893, and was sent to the World's Fair, where it was set up in the Kansas Building, after which it was taken to one of the large railroad-shops in Chicago, cut up and made into the writing-desk. The wood is beautiful; in fact, it is excelled by few other kinds; it is light in weight and color, takes the finest polish, and will endure for years either in the ground or exposed to the weather.

Thousands of these Catalpas have been planted in Kansas, but only a few have averaged a growth of an inch in diameter a year. Ten years ago we were told to plant Catalpas four feet apart each way, cultivate for three or four years, and in from eight to ten years every tree would make a post. Then we were to remove three-fourths of the grove, leaving the remainder for eight or ten years more. Now, that advice has not proved good, at least for small plantations. Trees, when planted four feet apart each way, will not make posts in ten years. The better way would seem to be to plant the trees in rows twelve to fifteen feet apart, and five to six feet apart in the row. Then crop the ground between the rows with Corn for at least three years; after that time three or four crops of Potatoes could be raised. The ground for both Corn and Potatoes should be cultivated thoroughly, for nothing makes a tree grow like good cultivation. It may be argued that if the trees are planted so far apart they will not grow straight and tall, and will have more top than trunk; but any one can grow Catalpa-trees almost perfectly straight, even though they be not planted very close. With proper care for ten years a grove of 250 Catalpas per acre would, at fifteen years from seed, average one foot in thickness at the butt, and ten to twelve feet to the first limb, with a stem almost as straight as an arrow. Such a grove need not cost very much money, but would be a blessing to the boy or girl whose father started and cared for them until a money value could be realized.

Topeka, Kans. *George W. Tincher.*

[No doubt, cultivation improves trees, but whether it would pay to cultivate in the way our correspondent recommends a hundred or a thousand acres planted with forest-trees is another question. Long straight trunks are always desirable in timber trees, and we should like to have the experience of Mr. Tincher, or any one else who has trained Catalpas into an upright habit of growth in any other way than the natural one of close planting, with an explanation of the precise process of growing Catalpas with tall, straight trunks when they are set twelve feet apart, and an estimate of its cost an acre.—ED.]

Meetings of Societies.

Annual Meeting of the American Forestry Association.

THE twelfth annual meeting of the American Forestry Association opened on Friday, December 15th, in the Agricultural Department Building, at Washington, with Assistant Secretary Willets in the chair. At the business session Secretary Morton was re-elected President; Dr. H. M. Fisher, Treasurer; B. E. Fernow, Chairman of Executive Committee, and J. D. W. French, Secretary pro tem. It was resolved, in view of the amount of money on hand, to secure as soon as possible the services of a paid permanent Secretary, and the Executive Committee was empowered to make the selection. A resolution was adopted favoring the McRae bill, which authorizes military protection for the forest-reservations, and provides for the sale of timber on Government land. It was also resolved to print the papers read at the Forestry meeting at Chicago. Colonel W. F. Fox, Forest Warden of New York, and a delegation from the Forest Commission of that state, invited the association to hold a meeting at Albany this winter during the session of the Legislature, and the invitation was accepted. The meeting is intended to be educational in its character, and it is proposed to have a careful discussion of questions relating to the best forest-policy for New York, at which members of the Legislature will be invited to assist, and it is hoped that, by concerted action, some more efficient laws for forest-preservation can be passed.

On Friday evening Mr. Fernow delivered an illustrated lecture, entitled "The Battle of the Forest," at a joint meeting of the association with the National Geographical Society, in which he gave a rapid sketch of the development of trees from the lowest forms of vegetation, and showed how the forest, by its various powers of aggression and defense, had gradually throughout geologic time gained possession of a considerable portion of the earth's surface. He also showed how in the various changes of the surface and climate of the earth certain species had been exterminated, and how some of them had retreated before the advancing ice and again occupied their old homes after the ice had retired. Another form of the forest-battle is the struggle for supremacy between different species of trees after they had overcome opposition from without, and many illustrations were given to show how some varieties, like the Torreyea, for instance, had become restricted to a very limited habitat, while others had spread from ocean to ocean, and how each varying condition of moisture and dryness, of altitude and latitude is taken advantage of by particular trees, which by some power of adaptation can succeed in crowding out their less fortunate competitors. What we call the virgin forest, then, is nothing more than the result of a struggle which has extended over thousands of years, in which the forest has not only conquered its way over untoward conditions, but after long internal warfare the stronger trees have assumed their position of supremacy over their fellows. Finally, the forest found its most inveterate enemy in man, who has taken sides against it throughout all historic time in the struggle to occupy the soil for agricultural purposes, and to use the wood for his necessities. Besides this, he has recklessly destroyed what he did not need, and has made no preparation for a future supply. The lantern pictures which illustrated this part of the lecture showed in a very striking way the desolation which wasteful cutting had made in the Adirondacks and other parts of the United States, while other slides showed the desolating effects of the axe in the French Alps, and the expensive and laborious character of the work that is now going on there to restore these mountains, as far as may be, to their original condition. It would be a fortunate thing for the country if the latter portion of this lecture, with its accompanying pictures, could be delivered in every town of the country as an aid in educating the public as to the necessity of good forest-laws, and their energetic enforcement.

On Saturday the Public Lands Committee of the House of Representatives gave a hearing to a delegation from the society. Secretary Morton presented the resolutions of the society endorsing the McRae bill, and Mr. Bowers, the Assistant Commissioner of the General Land Office, urged its passage, as did Colonel Fox, Mr. Fernow and others. The bill is already on the calendar, and the committee directed Mr. McRae to call it up on Monday.

Recent Publications.

American Woods. Exhibited by Actual Specimens. Romeyn B. Hough, Lowville, N. Y.

This is Part III. of a work whose earlier numbers have been noticed in former volumes of GARDEN AND FOREST. We remind our readers once more that these specimens are very thin slices of wood, cut in three directions, that is, transversely, radially, and tangentially, so as to show the grain both of the heart-wood and the sap-wood. These sections are beautifully mounted, and when held so that the light will shine through them they give a very complete idea of the structure of the wood and its appearance when worked. A pamphlet comes with the specimens which contains a good deal of descriptive matter concerning the trees, besides three keys which are used as an aid in identifying the species which are represented in the first three parts of the book. One of these keys is based mainly on the flowers, another on the leaves, and a third on the fruit. We repeat what we have said before, that this collection ought to be in every public school and library in the country. It may be added that Mr. Hough, whose address is Lowville, New York, also has specimens of these woods mounted for use in stereopticons in slides of standard size, which show a circular field two and three-quarter inches in diameter, and besides this he has most of the species prepared for the microscope, each slide containing the three sections and labeled with both the scientific and common names.

Each one of these parts contains the woods of twenty-five trees. Part III. contains, in addition to the regular wood specimens, sections of a burl of the Black Ash, as well as the wood of that tree. The sections are not all taken from native American trees. This last part contains the wood of the Lombardy Poplar, English Cherry and the common

Pear, all of which have, to a certain extent, become naturalized. Parts IV. and V. of the series will be out in time for the holidays, the latter being composed entirely of woods found in Florida.

Notes.

Mr. Elwood Alley writes us from Oran, Missouri, of a Sassafras-tree growing near that town, which, at five feet above the surface of the ground, has a trunk circumference of fourteen feet six inches.

A section of the Sequoia-trunk, thirty feet long, which was one of the attractions of the Columbian Fair, is to be set up permanently on the grounds of the Department of Agriculture in Washington. It is proposed to divide it into two rooms, one above the other, and to place in them a collection of pictures and other objects relating to forestry.

The *California Fruit Grower* calls upon the quarantine officers of that state to watch the importations of fruit and plants from the Hawaiian Islands, in order to prevent the introduction of a destructive leaf-eating beetle which has within a few years reached those islands from Japan. The beetles feed on the leaves of almost all fruit-trees, and they could easily make the voyage to California

A correspondent makes some inquiry as to the prospects of the profitable culture of Filberts in Canada. We have never known any experiments with these plants in our north-eastern states which have been continuously successful. If any of our readers have succeeded in growing these nuts in any quantity, we should be glad to hear something of the methods of culture employed, the varieties planted, and any other information on the subject.

One of the handsomest trees in the Botanic Gardens of Washington is a European Hornbeam, which was planted by Mr. Smith, the superintendent, about twenty-five years ago. It is very symmetrical in shape, and its branches spread out over a circle fifty feet in diameter. It has a stout trunk which breaks into numerous large limbs some four feet above the ground, although a distinct central stem continues much higher. The trunk measures six feet in circumference at its smallest point.

A writer in the *Scientific American*, describing the manufacture of desiccated cocoanut, states that the husked nuts come to this country in burlap bags containing about a hundred each, and are sold from the vessel at thirty to sixty dollars a thousand. In the preparation of the nut it is first set on end and struck with a hammer, and the shell and kernel cracked at the same time. The outer shell is then removed and the nut passed along to the peelers, who remove the dark skin. An expert can shell as many as 3,000 nuts in a day, and a first-class hand can peel as many as 1,800. The kernels are then put through a grating machine having a capacity of 7,000 nuts a day. About seventy pounds of grated material are placed in each of a series of heated galvanized pans resting on steam pipes, and from eight to thirty pounds of granulated sugar are added to each pan. After drying twelve hours, the material is passed through a sieve and packed in boxes and barrels.

The variety of Asparagus plumosus known as Nanus is not as strong as the type, but its foliage is a richer green, and it has the merit of throwing out its fern-like branches to the ground, while the stronger plant is often bare for several feet above the roots. There is nothing to take the place of the branches of this Asparagus to mingle with cut flowers, and they can be used over and over again since they will keep for two or three weeks in water. A mass of this dwarf variety is very beautiful by itself, as a glance through one of the greenhouses of Mr. W. S. Clark, in Washington, District of Columbia, will convince any visitor. Here is a house containing considerably over 2,000 plants trained to wires and running up eight or ten feet to the roof, with every plant feathered to the ground. As one looks through the plants the long structure seems filled with a mist of tender green, so delicate is the color and so fine the lines of the soft and slender growth.

The latest number of the *Rural New Yorker* contains a figure of a new Grape which is a seedling from Moore's Early, raised by Mr. George W. Campbell, of Delaware, Ohio, and named by him Campbell's Early. Perfectly colored and apparently ripe clusters were exhibited at the Ohio State Fair on the 27th of August. The vines were not sprayed and the berries were not bagged until they began to color, and yet there was no attack of rot. The berry is black, with a thin but very tenacious skin, larger and firmer than the Concord or Worden, having smaller seeds, and sweet to the centre; that is, there is no acidity in the pulp about the seed as there is in the Concord. It is mild, but richly flavored and has no foxiness. Indeed, in several ways this seems to be a better grape than the Concord, while it is much earlier. The point which remains to be decided is whether it will succeed elsewhere as well as it does in Ohio. One important advantage which the Concord possesses over other Grapes is the wide range of country over which it will thrive.

The thirty-third part of the English edition, the last to reach us, of *Lindenia*, the Messrs. Lindens' sumptuous Iconography of Orchids, contains plates of Zygopetalum grandiflorum, a native of south Mexico and Central America, and perhaps better known by its older name of Batemannia grandiflora in collections where, however, it is not very often seen; of the Peruvian Lycaste cinnabarina, a plant with magnificent flowers, conspicuous for the large lip of a deep apricot color, which makes a beautiful contrast with the pale green sepals and petals; of Cattleya velutina, with its dark orange color, spotted petals and purple-veined lip; and of a variety of the well-known Vanda tricolor, to which the varietal name of Hoveæ is given in honor of Madame Van den Hove. *Lindenia* is one of the books which are indispensable to every serious student of Orchids, and will naturally find a place in all botanical and horticultural libraries; the beauty of the illustrations and their fidelity to nature commend it to all lovers of handsome books.

Mr. F. Franceschi, who, it will be remembered, has written about the trees of Guadalupe Island, off the coast of Lower California, in the columns of Garden and Forest, writing more recently on the same subject in *Zoe*, says: "The increase in the number of wild goats has gone on these last years unchecked by the few thousands which may have been killed by the poachers who visit the island from time to time. The result is vividly shown by the fact that in all my ramblings over the island I was able to find but one single shrub, Ceanothus crassifolius, alive in any of the places accessible to goats. Endowed as these are with proverbial climbing ability, the more so when pressed by hunger, the few plants that have escaped destruction are those growing on the perpendicular basaltic cliffs, accessible only to winged creatures, and old trees with bark too hard and woody to offer any food." By far the most abundant of all the shrubs still living on the island is Perityle incana, and it is the most likely to survive under the unfavorable circumstances, as it seems quite at home on the more precipitous cliffs, and young plants and seedlings are abundant in the crevices of the rocks. More tender plants likewise find a chance to survive in possessing cliff-climbing powers superior to those of the goats, as is the case with Convolvulus macrostegius, which, although highly relished by goats, is still keeping its hold on the most perpendicular cliffs, where its drooping green masses form a striking contrast to the silvery foliage of Perityle Palmeri.

A light crop of apples in this country and the prevailing dullness of trade have affected the exports of this fruit, and but 97,152 barrels have been shipped to England from the United States and Canada to December 16th, whereas for the corresponding period of last year the exports amounted to 838,567 barrels. The supply of Newtown pippins is larger than usual, and as fewer of these favorite export apples are being sent to England they are proportionately cheaper in this market than other choice apples, and are sold as low as $6 a barrel, the best selected fruit being $10. Showy Spitzenbergs are thirty to sixty cents a dozen, and good Florida oranges now cost less than choice apples. Common grades of grape fruit, as well as Tangerine and Mandarin oranges, can be had for almost any price. Stem-cut dates from Malta, of excellent quality, are thirty-five cents a pound. Spanish pomegranates and Japanese persimmons can be had at five to ten cents each, and Coe's Late Red plums, from California, have only disappeared from fruit-stands within a week past. White Muscat grapes, the leading table variety of California, are in exceptionally good condition, being thoroughly matured and altogether better than any seen here earlier in the season. A six-pound box costs seventy-five cents to a dollar. Flame Tokay grapes bring as high as thirty cents a pound, Almerias from fifteen to thirty cents, and Gros Colman, from English hot-houses, are two dollars a pound. Winter Nelis pears cost fifty cents to a dollar a dozen, according to size, and Eastern Beurre are a dollar, the largest Comice bringing a dollar and a half a dozen. Lychee nuts, from China, are variously sold at twenty cents a quart and forty cents a pound. Beautiful hot-house tomatoes of large size and extra quality are now coming from Grimsby, Canada, each tomato wrapped in paper bearing the name of the grower. These bring fifty cents a pound.